THREE SMALL SPECIES OF OTHONNA.

By R. H. Compton.

(With Plate XX.)

The genus Othonna includes, *inter alia*, a considerable number of species in the Western Cape Province and adjoining regions—many very imperfectly known—showing enlarged perennial storage organs. In some cases these are subterranean tubers from which rise shoots bearing leaves and flowers in winter and spring which disappear with the onset of the dry summer. In other species there is a thickened and somewhat branched aerial stem, often covered with a horny bark which bears a limited number of more or less abbreviated seasonal leaf- and flower-bearing shoots, often with a basal tuft of woolly hairs.

The three species which are the subject of this paper are the dwarfest examples of this latter type. They are plants very liable to escape notice in the field owing to the fact that their very short brown stems hardly rise above the surface of the ground and are often covered by blown soil, and because of their small leaves and flowers and the short season during which they are in evidence. Two of them—*O. cacalioides* L.f. and *O. minima* DC.—have long been on record though very seldom collected since their first discovery: the third species, to be described below, has only recently been brought to light.

All three species grow within 50 miles of one another, and all are found in similar situations, viz. in shallow depressions or crevices in hard level or gently sloping quartzitic rocks, in a winter rainfall of perhaps 12—15 inches per annum, and exposed to full sunshine. They are clearly adapted to strongly seasonal conditions involving long aridity and high tempertures. They are associated in their habitat with other small succulents and bulbous plants: one of them, *O. cacalioides*, is found in close association with the smallest known Conophytum, the smallest known Anacampseros, and one of the smallest known species of Crassula:* and the other species also grow in proximity to Conophytums.

They form a closely related group, obviously derived from common ancestry, showing extreme adaptation to their special conditions of life, and so limited in distribution as to suggest recent evolution. In cultivation they show little change of form.

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* These three species I had the good fortune to find in one day in 1926 on the rocks near the summit of van Rhyn's Pass: *Conophytum Comptonii* N. E. Br., *Anacampseros Comptonii* Pillans, *Crassula Comptonii* Hutchinson and Pillans: but I missed the Othonna. (*See* Hutchinson, Botanist in South Africa, p. 149, 1946.)

Othonna cacalioides L.f.

In his brief description the younger Linnaeus (Suppl. p. 388, 1781) gives the locality of *O. cacalioides* simply as "in rupibus Cap. bonae spei. Thunberg". In the Schultes edition of Thunberg's Flora Capensis (p. 719, 1823), however, the following is given: "Crescit in Bockland's summo monte in rupibus denudatis planis. Floret Octobri, Novembri." Harvey (Fl. Cap. III p. 339, 1864) says "Hab. Bocklandsberg, Thunberg, (Herb. Sond.)."

The locality, Bocklandsberg, is closely fixed by Thunberg's Travels (See M. C. Karsten in Journ. S.A. Bot. V, p. 147, 1939): the route being up the valley of the Doorn River (a tributary of the Zout River) about 20 miles north of van Rhyn's Pass; the mountain on the south side of this valley being to-day known as the Bokkeveldberg, and being part of the same Bokkeveld Mountains escarpment up which van Rhyn's Pass climbs.

Thunberg's type is at Uppsala, where it is labelled "Cap. b. spei. Thunberg". I am indebted to Dr. C. G. Alm for a photograph of the sheet. The isotype in the Stockholm Botanical Museum was lent me through the kindness of Dr. T. Norlindh, and was photographed by the University of Cape Town Photographic Department (Plate XX 1.). This sheet bears on the back a copy of the original L.f. description etc., with the addendum

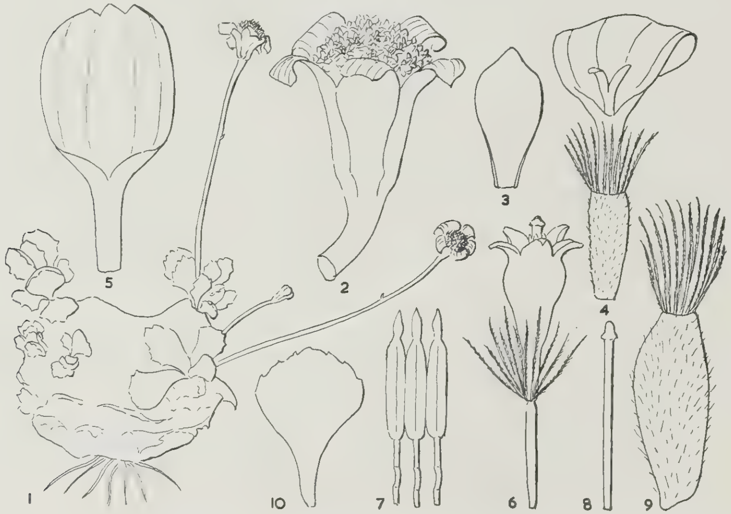

Fig. 1. *Othonna cacalioides* L.f. 1. Plant, life size: 2. Capitulum × 5. 3. Involucral bract × 5. 4. Ray floret × 10. 5. Corolla of ray floret × 10. 6. Disc floret × 10. 7. Stamens of disc floret × 20. 8. Pollen presenter of disc floret × 10. 9. Ray achene × 10. *G. G. Smith*, Nat. Bot. Gdns. 101/46. (*Del.* W. F. Barker.)

"Specimen inde missit Exp. D.D. Thunberg anno 1775. Herb. Montin." Mr. A. A. Bullock informs me that there is no specimen of *O. cacalioides* at Kew (apart, as we shall see, from "*O. Pillansii* Hutchinson").

Mr. N. S. Pillans, who visited van Rhyn's Pass in 1928, found an Othonna which he regarded as a new species, and on 11th October 1928 he pointed it out to Dr. J. Hutchinson, who gathered specimens for the Kew Herbarium (*Hutchinson* 781), and described it as *O. Pillansii.* (Botanist in S. Africa, p. 150, 1946.) In 1946 it was collected on the same spot by Mr. G. G. Smith (Nat. Bot. Gardens 101/46) and was grown at Kirstenbosch where it flowered next year and afterwards. (Specimen in Kirstenbosch Herbarium, 11 Sept. 1947.)

O. Pillansii is undoubtedly conspecific with *O. cacalioides*, and Hutchinson's name must therefore unfortunately disappear. Comparison of the recently collected van Rhyn's Pass specimens with the isotype material and photographs establish the identity.

Drawings of Hutchinson's plant accompany his description, and further drawings, for which I have to thank Miss W. F. Barker, made from G. G. Smith's plant, are published herewith. (Fig. 1.)

Othonna minima DC.

This species was described by De Candolle (Prodr. VI, p. 479, 1837), who stated that it was collected on the Giftberg by Drège. It is mentioned by Drège (Zwei pflgeog. Dok. p. 71, 1843) as being collected on the Giftberg, 1500—2000 ft. alt. in November. In the Flora Capensis (III, p. 339, 1864) Harvey cites a specimen in Sonder's Herbarium and states that it was "raised in Hamburg Bot. Garden from Drège's seeds". Mr. A. A. Bullock (27 April 1948) informs me that Kew has material of *O. minima* DC. which "consists of a single inflorescence and half a dozen detached leaves of a specimen collected by Drège, Giftberg 1500—2000 ft in November 1839* and is evidently part of the type."

By the kindness of Dr. Norlindh I was sent the specimen of *O. minima* in the Stockholm Botanical Museum, and this has been photographed by the University of Cape Town Photographic Department. (Plate XX. 2). The sheet bears the inscription "*Othonna minima* DC. Hort. Hamb. 1839 e semina Dregeana enata. 43".

The Giftberg was little visited botanically during the century since Drège made his collection, and the next record of *O. minima* was in September 1948 when I found it growing in fair quantity on quartzitic pavement formation, in crevices and rock-pans at about 3000 ft. alt. (*Compton*

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*Drège, however, had left South Africa in 1834. The date 1839 is the same as that on the Stockholm specimen (*see below*) grown in Hamburg and evidently several years old.

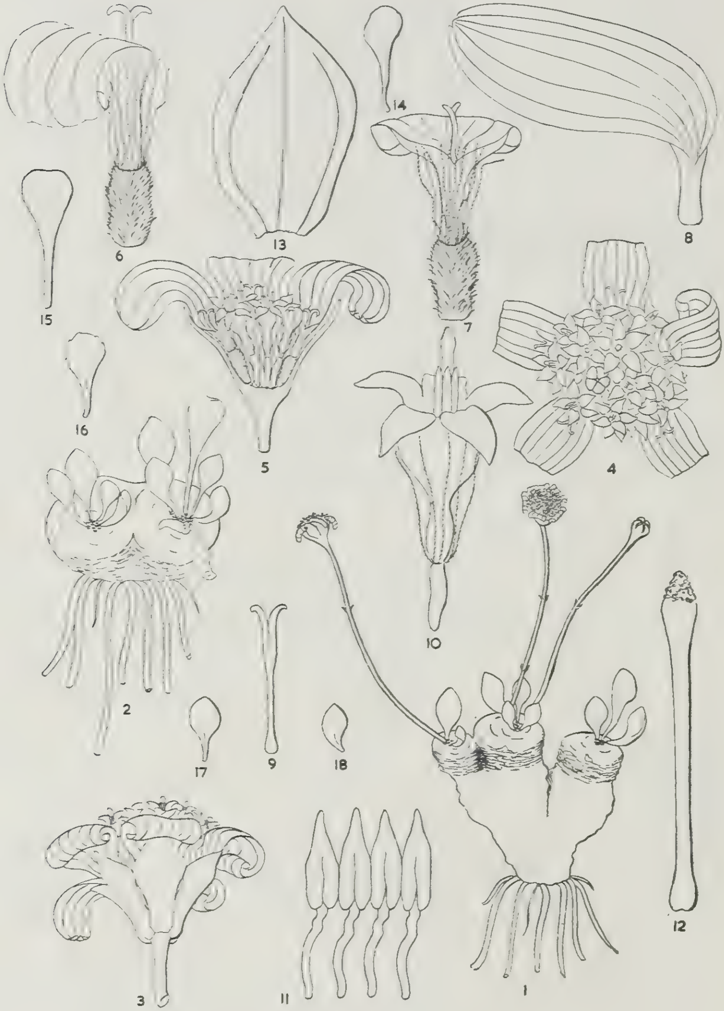

FIG. 2. *Othonna minima* DC. 1. Plant with leaves and flowers, nat. size. 2. Plant with leaves only, nat. size. 3, 4, 5. Capitulum, side view, apical view, cut lengthwise, × 5. 6, 7. Ray florets × 10. 8. Corolla of ray floret × 10. 9. Style and stigmas of ray floret × 10. 10. Disc floret × 10. 11. Four stamens of disc floret × 20. 12. Pollen presenter of disc floret × 20. 13. Involucral bract × 10. 14—18. Leaves, nat. size. *Compton* 20844. (*Del.* J. Elffers.)

20844). Material was obtained for Kirstenbosch and was grown there and produced leaves and flowers abundantly without apparently changing its habit: specimens of these plants are also in the Kirstenbosch Herbarium. (Nat. Bot. Gdns. 1313/48.) The correspondence between my plants and those of Drège is exact. Miss J. Elffers made drawings of the wild material and these are reproduced herewith. (Fig. 2.)

Mr. A. A. Bullock, writing in April 1948 on the subject of the Kew material of these small Othonnas—*O. minima* and *O. Pillansii* (i.e. *O. cacalioides*) remarks that "on the evidence of these specimens the two species must be maintained, but further material will probably show that they are conspecific." In my opinion, however, they are distinct enough to be regarded still as separate species—to which I now add a third.

O. minima differs from *O. cacalioides* in its more cylindrical (or button-shaped) stem-tips, its entire or only slightly denticulate leaves, its more elongated and slenderer peduncles which sometimes branch slightly, its longer and narrower ray ligules, the broader bell of its disc corollas, and the longer pappus hairs in both its ray and disc florets.

Othonna pygmaea Compton sp. nov.

Fruticulus parvus, caulibus brevibus incrassatis, *foliis* spathulatis, integris vel leviter denticulatis, glabris, pedunculis simplicibus vel paulo ramosis. *Capitulum* parvum, involucri bracteis 5, late ovatis, obtusis, breviter apiculatis, minute ciliolatis. *Radii flosculi* 5, flavi, femini, breviter ligulati, parum involucri bracteas excedentes, ovario dense sericeo-pubescente, pappi setis uniseriatis, tenuibus. *Disci flosculi* c. 13, masculini, corollis flavis, e base anguste campanulatis, pappo nullo.

Habitat. Cape Province. Clanwilliam Division: Klipfonteinrand, east of Brandewyn River, on sloping rocks, 1800 ft. alt., 29 April 1947 (young flowers and leaves), *Compton* 19472 (*Type*, in Herb. Nat. Bot. Gdns.): Grown at Kirstenbosch 207/47. *Barker* 4717, 13 Sept. 1947 (mature leaves): grown at Kirstenbosch 554/47.

A small depressed shrublet, slightly branched, the *branches* contiguous, remaining short, obconical, 1 cm. or less in length, circular in section, the apex truncate, 1.5 cm. in diameter or less, bearing one or more clusters of leaves with a few short brown woolly hairs at their base, hard in consistency and covered with a smooth brown horny bark which peels off and disappears. *Leaves* beginning to appear at flowering time, growing as the flowers fade, finally reaching 2.5—3.5 cm. long, 1.0—1.5 cm. wide in well grown plants, softly succulent, glabrous, glaucous, nerveless when fresh, 3-nerved when dry, flat, broadly spathulate, usually obtuse, occasionally retuse or subacute, entire or slightly lobulate-crenate, often having a few distant denticles, deciduous. *Inflorescences* one or few, erect, arising

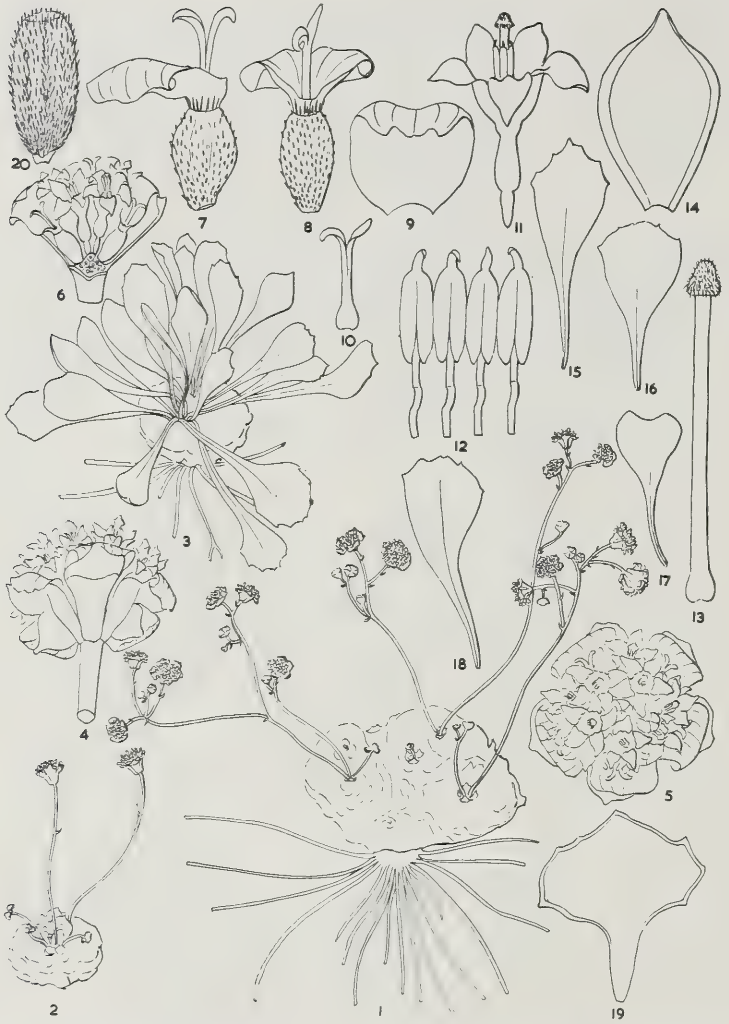

Fig. 3. *Othonna pygmaea* Compton. 1. Plant in flower, nat. size. 2. A smaller specimen, nat. size. 3. Plant in leaf, nat. size. 4, 5, 6. Capitulum, side view, apical view, cut lengthwise × 5. 7, 8. Ray florets × 10. 9. Corolla of ray floret × 10. 10. Style of ray floret × 10. 11. Disc floret × 10. 12. Four stamens from disc floret × 20. 13. Pollen presenter of disc floret × 20. 14. Involucral bract × 10 15—19. Leaves, nat. size. 20. Achene × 10. *Compton* 19472 and Nat. Bot. Gdns. 207/47. (*Del.* W. F. Barker.)

from the stem apex, 2—5 cm. long, simple or slightly panicled, the peduncle terete, glabrous, c. 0.7 mm. thick, bearing one or a few minute subtending bracts. *Capitulum* c. 5 mm. diam. when fully expanded. *Involucre* broadly campanulate, slightly fleshy, green, consisting of 5 bracts, slightly connate at the base, valvate in the bud, broadly ovate, obtuse, shortly apiculate, minutely denticulate, 3 mm. long, 1.8 mm. broad. *Ray florets* 5, opposite the involucral bracts, shortly ligulate, female, the corolla yellow, 1.5 mm. long, 1.0 mm. wide, scarcely exceeding the involucre; ovary densely silky-pubescent, stigmas filiform. *Disc florets* c. 13, male, corolla yellow, campanulate from a short slender base, 1.5 mm. long, the 5 lobes about equal in length to the tube, ovary rudimentary, style with a clavate pollen presenter. *Pappus* of ray florets of numerous delicate hairs in one series, 0.5 mm. long, absent in the disc florets.

An inconspicuous plant growing in shallow pan of coarse sandy detritus in gently sloping quartzite pavement rocks of the Table Mountain Sandstone formation. Most of the plants have only one or a few stems, but some reach a diameter of 5 cm. and may have as many as 15—20 branches, which however remain short and in the resting state hardly project above the level of the sand.

From *O. cacalioides* it differs in its usually paniculate inflorescence, the more slender peduncles, the smaller capitula, the broader shape of the involucre, the much shorter ray florets, the fewer disc florets and the absence of pappus in the disc florets: the growth of its stem tends to be more depressed and the leaves spread more widely from the stem apices.

From *O. minima* it differs in its usually freely paniculate inflorescence, the smaller capitula with fewer disc florets, the shorter ray florets, the shorter pappus in the ray florets and its absence in the disc florets: the stems are of less definite, more or less obconic shape.

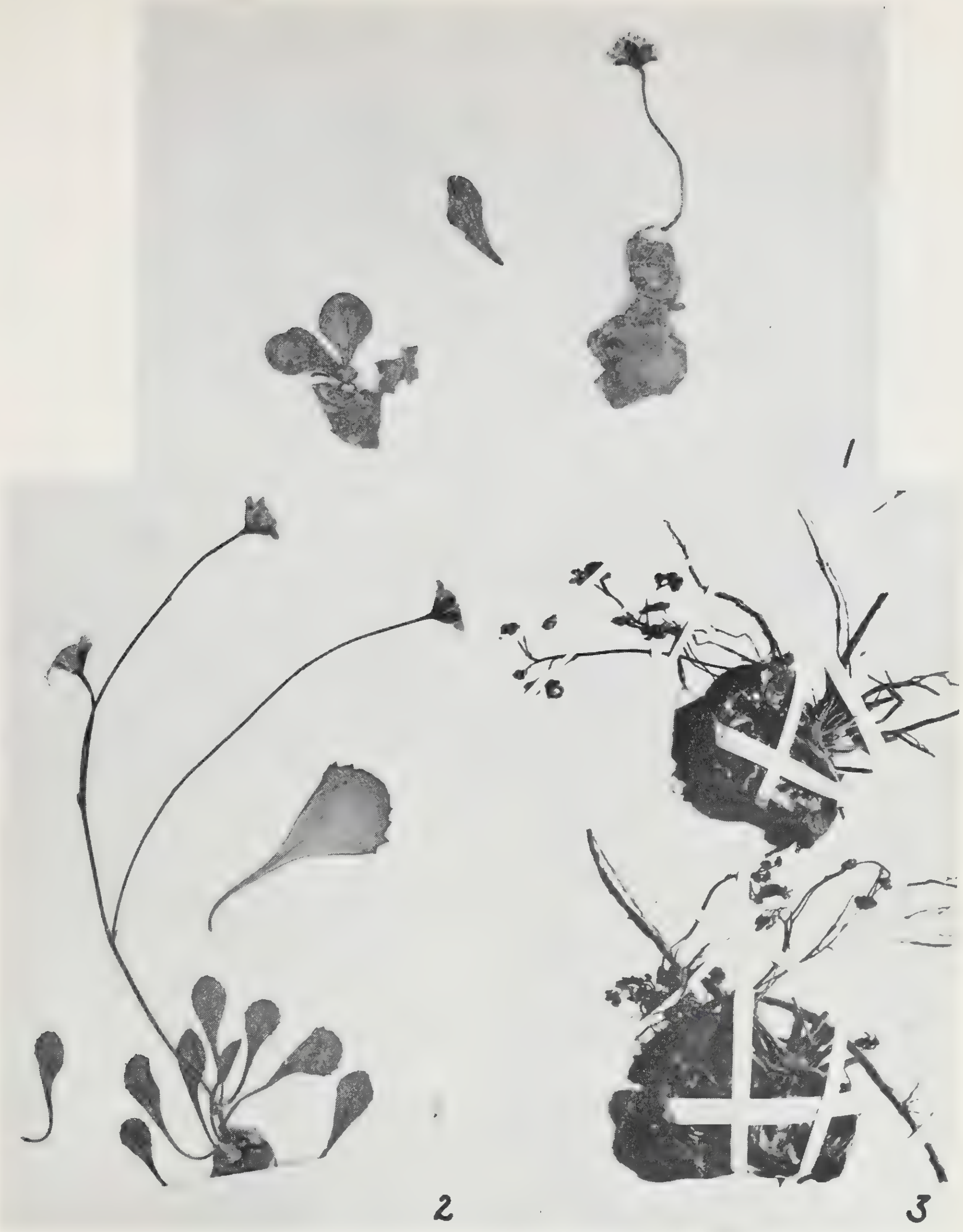

Plate XX. 1. *Othonna cacalioides* L.f. Thunberg, 1775. Isotype in Botanical Museum, Stockholm. Nat. size.

2. *Othonna minima* DC. Grown from Drège's seeds in Hamburg Botanic Garden, 1839. Isotype in Botanical Museum, Stockholm. Nat. size.

3. *Othonna pygmaea* Compton. Klipfonteinrand, 29 April 1947. *Compton* 19472 in Herb. Nat. Bot. Gdns. (*Type.*) $\frac{7}{8}$ nat. size (linear).

Photographs by University of Cape Town Photographic Department.